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MEMORANDUM

To: Members of the Subcommittee on National Security, Emerging Threats, and International Relations

From: Vincent Chase, Chief Investigator

Date: September 9, 2004

Subject: Briefing memorandum for the hearing entitled, *Homeland Security: Monitoring Nuclear Power Plant Security* scheduled for Tuesday, September 14th at 10:00 a.m., room 2247 Rayburn House Office Building.

PURPOSE OF HEARING

The purpose of the hearing is to examine Nuclear Regulatory Commission (NRC) oversight of security at commercial nuclear power plants.

HEARING ISSUE

1. How adequate are the security measures recommended by Nuclear Regulatory Commission (NRC) to protect nuclear power plants from terrorist attacks?

BACKGROUND

The Nuclear Regulatory Commission (NRC), an independent federal regulatory agency, is responsible for licensing and regulating nuclear power facilities and materials. The Atomic Energy Act of 1954[1], and the Energy Reorganization Act of 1974[2] gave the NRC the responsibility for ensuring the safe and peaceful uses of nuclear energy. **(Web Resource 1)**

Five Commissioners appointed by the President and confirmed by the Senate for five-year terms manage the NRC. One of the commissioners is designated by the President to be the Chairman and official spokesperson of the Commission.

The commission as a whole formulates policies and regulations governing nuclear reactor and materials safety, issues orders to licensees, and adjudicates legal matters brought before it. The NRC implements commission programs through four regional offices. The United States has 103 commercial nuclear reactors at 65 nuclear plant sites in 31 states. **(Attachment 1)**

Security for commercial nuclear power plants is primarily the responsibility of the commission's Office of Nuclear Security and Incident Response. This office develops overall agency policy and provides management direction for evaluating and assessing technical issues involving security at nuclear facilities and directs the NRC program for response to incidents. In addition, the Office coordinates security activities with the Department of Homeland Security, the intelligence and law enforcement communities and the Department of Energy (DOE).[3]

Commercial nuclear power plants are also subject to federal and state laws that control certain matters related to security functions, such as the possession and use of automatic weapons by security guards and the use of deadly force. As an example, the State of New York authorized the Indian Point Nuclear facility security personnel to carry automatic weapons as part of the facility's enhanced security measures after September 11, 2001.

[1] 42 U.S.C. 2011 (Public Act 83-703)
[2] 42 U.S.C. 5801 (Public Act 93-438)
[3] DOE maintains a complex of national laboratories and nuclear weapon production facilities

The following map shows the location of commercial nuclear power plants operating in the United States.

Figure 1: Commercial Nuclear Power Plants in the United States

Nuclear Regulatory Commission responsibilities include regulating nuclear power plant licensees' accounting systems for nuclear materials, and security programs and contingency plans for dealing with threats, thefts, and sabotage relating to nuclear material, high-level radioactive wastes, nuclear facilities, and other radioactive materials and activities. Programs that promote the common defense and security and protect public health and safety by guarding against theft and sabotage are generally referred to as safeguards and security.

Primary responsibility for nuclear safety and regulatory compliance lies with nuclear utilities. The utilities are required to identify security problems and report them to the NRC. Nuclear facilities are required to protect against a specified level of threat (known as the Design Basis Threat or DBT) from outside attackers and inside conspirators using extensive security measures. **(Web Resource 2)**

Nuclear Regulatory Commission regulations require nuclear power plants to take adequate measures to protect the public from the possibility of exposure to radioactive release caused by acts of sabotage. These measures include:

- the physical construction of the containment building for the reactor,
- security personnel, procedures, and surveillance equipment, and
- security clearance background checks and daily monitoring for plant employees. **(Web Resource 3)**

In February 2002, the NRC issued an order requiring utilities to make improvements in nuclear power plant security in response to the September 11, 2001 terrorist attacks. **(Attachment 2)**

These improvements included increases in the guard force, requirements that guards carry their primary weapons while on patrol, extending and fortifying security perimeters (the movement of truck bomb barriers farther from reactor targets), installing additional high-tech surveillance equipment, and strengthening coordination of security efforts with local, state and federal agencies. **(Attachment 3)**

On April 29, 2003 the NRC issued orders to all licensed nuclear power plants that formally set regulatory requirements to meet the new security threat. The severity of attacks to be prepared for are specified in the classified design basis threat (DBT). The regulatory orders changed the DBT to "represent the largest reasonable threat against which a regulated private guard force should be expected to defend under existing law." According to the NRC, the cost of implementing the revised DBT security enhancements is estimated at $16 million per nuclear plant site or $1.02 billion. **(Attachment 4)**

The NRC requires each nuclear plant to conduct periodic security exercises to test its ability to defend against the design basis threat. In these "force on force" exercises, monitored by the NRC, an adversary force from outside the plant attempts to penetrate the plant's vital area and damage or destroy key safety components. Participants in the tightly controlled exercises carry weapons modified to fire only blanks and laser bursts to simulate bullets, and they wear laser sensors to indicate hits. Other weapons and explosives, as well as destruction or breaching of physical security barriers, may also be simulated. While one squad of the plant's guard force is participating in a force-on-force exercise, another squad is also on duty to maintain normal plant security. Plant defenders know that a mock attack will take place some time during a specific period of several hours, but they do not know the

attack scenario. Multiple attack scenarios are conducted over several days of exercises.

The force-on-force program is currently in a transitional period between a pilot program conducted in 2003 and full implementation, which is to coincide with the effective date of the new DBT in late 2004. The transitional phase will be used to develop standard procedures and other requirements that will be implemented when the NRC begins using the force-on-force exercises to evaluate plant security and as a basis for taking enforcement action. Many tradeoffs will be necessary to make the exercises as realistic and consistent as possible without endangering participants or regular plant operations and security. Each plant will be required to conduct the force-on-force exercises once every three years. **(Attachment 5)**

In September 2003, GAO issued a report entitled, *Nuclear Regulatory Commission: Oversight of Security at Nuclear Power Plants needs to be Strengthened* recommending measures to improve plant site security. **(Web Resource 4)** These recommendations include:

- ensure the NRC's revised security inspection program and force-on force exercise program are implemented and require that NRC regional inspectors conduct follow-up visits to verify corrective actions have been taken when security violations have been identified;

- ensure the NRC routinely collects, analyzes, and disseminates information on security problems, solutions, and lessons learned and shares this information with all NRC regions and licensees;

- make force-on-force exercises a required activity and strengthen them by conducting the exercises more frequently at each plant;

- use laser equipment to ensure accurate accounts of shots fired;

- require the exercises make use of the full terrorist capabilities stated in the design basis threat, including the use of an adversary force that has been trained in terrorist tactics;

- continue the practice, begun in 2000, of prohibiting licensees from temporarily increasing the number of guards defending the plant and

enhancing plant defenses for force-on-force exercises, or requiring that any temporary security enhancements be officially incorporated into the licensees' security plans; and

• enforce the NRC's requirement that force-on-force exercise reports be issued within 30 to 45 days after the end of the exercise to ensure prompt correction of the problems noted.

DISCUSSION OF HEARING ISSUE

How adequate are the security measures recommended by Nuclear Regulatory Commission (NRC) to protect nuclear power plants from terrorist attacks?

In testimony, the Government Accountability Office will describe the NRC's efforts since September 11, 2001, to improve security at nuclear power plants, including actions the NRC has taken to implement GAO's September 2003 recommendations to improve plant site security. **(Web Resource 4)**

In addition, GAO will discuss the extent to which the NRC is in a position to assure itself and the public the Commissions efforts will protect the plants against terrorist attacks.

GAO found the NRC responded quickly to the September 11, 2001 terrorist attacks with multiple steps to enhance security at commercial nuclear power plants. For example, the NRC immediately advised the plants to go to the highest level of security according to the system in place at the time and issued a series of advisories and an order to the plants to make security enhancement that could be completed quickly to shore up security until a more comprehensive analysis of the terrorist threat and how to best protect the plants against that threat could be completed.

However, GAO found it will take several more years for the NRC to have assurances that the plants are protected against the terrorist threat. The plants' development and implementation of security plans to comprehensively address the new DBT is a critical step in ensuring that individual plants can defend against terrorism. Although new security plans are to be approved and implemented by October 29, 2004, the NRC will not

have the detailed knowledge about security at individual facilities to ensure that these plans provide this protection.

According to GAO, the NRC will not have this detailed knowledge primarily for two reasons. First, the NRC's review of the new security plans has been rushed and, to a large extent, superficial. The NRC's review is essentially a paper review. NRC reviewers are not visiting the plants to obtain details about the plans and view how the plans interface with the plants' physical layout. In addition, the documents and studies supporting the security plans are generally not being submitted to the NRC with the draft plans. Second, it will take up to 3 years for the NRC to test implementation of all the new plans through force-on-force exercises.

Moreover, the NRC is considering action that could compromise the integrity of the exercises. Specifically, the NRC is planning to require the use an adversary force trained in terrorist tactics, as recommended in GAO's September 2003 report. However, the NRC is considering the use of a force provided by a company that the nuclear power industry selected. This company provides guards for about half the facilities to be tested. This relationship with the industry raises questions about the force's independence.

Furthermore, the NRC is not taking advantage of other opportunities to improve the effectiveness of the exercises and its oversight in general by implementing other recommendations from GAO September 2003 report. For example, the NRC is not following up to verify that all violations it found in previous inspections have been corrected and is not taking steps to make "lessons-learned" from inspections available to other regional offices and nuclear power plants as recommended by GAO.

In addition to these concerns, GAO will testify the NRC DBT is similar to the Department of Energy's DBT for protecting nuclear facilities. However, in April 2004, DOE told the Subcommittee that it would have to revisit the Department's post-September 11 DBT. If the NRC finds it needs to revisit and revise their DBT, the Commission will need even more time and funding to put all the necessary security enhancements in place and to test them. Critics of NRC's regulatory system contend that the new DBT still does not adequately represent the credible terrorist threat faced by nuclear power plants. **(Attachment 6)**

Finally, certain vulnerabilities, such as airborne assaults, are currently being addressed outside of the DBT. Nuclear power plants were designed to withstand hurricanes, earthquakes, and other extreme events, but attacks by large airliners loaded with fuel, such as those that crashed into the World Trade Center, were not contemplated when design requirements were determined. NRC announced that its review of security regulations would include a detailed engineering analysis of the effects of such a crash, but that analysis has not yet been completed.

In light of the possibility that an air attack might penetrate the containment building of a nuclear plant, some interest groups have suggested that such an event could be followed by a meltdown and contamination and exposure of a large numbers of persons to escaping radioactivity. Nuclear industry spokespersons have countered by pointing out that small, low-lying nuclear power plants are poor targets for attack, and have argued that penetration of the containment is unlikely, and that even if it occurred it probably would not reach the reactor vessel. They suggest that a sustained fire, such as that which melted the structures in the World Trade Center buildings, would be impossible unless an attacking plane penetrated the containment completely, including its fuel-bearing wings. Any changes in this approach to these vulnerabilities could similarly place additional requirements on the plants.

WITNESS TESTIMONY

PANEL ONE

Mr. Luis A. Reyes, Executive Director of Operations, Nuclear Regulatory Commission will testify about NRC safeguards and security procedures and programs.

Mr. Roy P. Zimmerman, Director, Office of Nuclear Security and Incidence Response, Nuclear Regulatory Commission will testify about the NRC DBT.

PANEL TWO

Mr. Jim Wells, Director, Natural Resources and Environment, Government Accountability Office will testify about the development of the post September 11th design basis threat including the relationship of the DBT to the postulated threat, plan implementation, the potential cost of the plan and timeframes for the implementation of the plan.

PANEL THREE

Mr. Marvin Fertel, Vice President and Chief Nuclear Officer
Nuclear Energy Institute will testify about industry implementation of post September 11, 2001 security enhancements.

Mr. Alex Matthiessen, Director, Hudson Riverkeeper will testify about Indian Point Nuclear Power facility security enhancements.

Mr. David Lochbaum, Union of Concerned Scientists will testify about the health and economic aspects of a terrorist attack at the Indian Point nuclear power facility.

ATTACHMENTS

1. *Nuclear Regulatory Commission: Oversight of Security at Nuclear Power Plants needs to be Strengthened*, Government Accountability Office, September 2003, Report No. GAO-03-752, pg. 30-32.

2. NRC News, ***NRC ORDERS NUCLEAR POWER PLANTS TO ENHANCE SECURITY,*** Nuclear Regulatory Commission, February 26, 2002.

3. *Fact Sheet on Nuclear Security Enhancements Since September 11, 2001*, U.S. Nuclear Regulatory Commission.

4. NRC News, *NRC APPROVES CHANGES TO THE DESIGN BASIS THREAT AND ISSUES ORDERS FOR NUCLEAR POWER PLANTS TO FURTHER ENHANCE SECURITY,* Nuclear Regulatory Commission, April 29, 2003

5. CRS Report for Congress, *Nuclear Power Plants: Vulnerability to Terrorist Attack*, RS21131, Updated March 23, 2004.

6. Speech by Project on Government Oversight (POGO) Executive Director Danielle Brian to the Nuclear Regulatory Commission's 2004 Regulatory Information Conference. March 11, 2004.

WEB RESOURCES

1. U.S. Nuclear Regulatory Commission (NRC)
< http://www.nrc.gov/>
visited August 24, 2004.

2. *Safety and Security: Plant Security: Physical Barriers, Armed Guards, Personnel Procedures*, Nuclear Energy Institute,
<http://www.nei.org/index.asp?catnum=2&catid=214 >
visited August 30, 2004.

3. *Nuclear Power Plant Security: Voices from Inside the Fences,*
Project on Government Oversight (POGO), September 12, 2002
< http://www.pogo.org/p/environment/eo-020901-nukepower.html>
visited August 26, 2004

4. *Nuclear Regulatory Commission: Oversight of Security at Nuclear Power Plants needs to be Strengthened*, Government Accountability Office, September 2003, Report No. GAO-03-752, pg. 30-32.
< http://www.gao.gov/new.items/d03752.pdf>
visited August 25, 2004

WITNESS LIST

PANEL ONE

The Honorable Nils J. Diaz, Chairman
Nuclear Regulatory Commission

The Honorable Edward McGaffigan, Commissioner
Nuclear Regulatory Commission

The Honorable Jeffrey Merrifield, Commissioner
Nuclear Regulatory Commission

PANEL TWO

Mr. Jim Wells, Director,
Natural Resources and Environment
Government Accountability Office

accompanied by

Mr. Raymond H. Smith, Jr., Assistant Director,
Natural Resources and Environment
Government Accountability Office

Mr. Kenneth E. Lightner**, Jr.,** Senior Analyst
Natural Resources and Environment
Government Accountability Office

PANEL THREE

Mr. Marvin Fertel,
Vice President and Chief Nuclear Officer
Nuclear Energy Institute

Mr. Alex Matthiessen, Director
Hudson Riverkeeper
Garrison, New York

Mr. David Lochbaum
Union of Concerned Scientists
Washington, D.C.